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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/802,734

03/18/2004

Alex A. Behfar

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7590

01/12/2006

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EXAMINER

VANNUCCI, JAMES

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,734

Applicant(s)

BEHFAR ET AL.

Examiner

Jim Vannucci

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-13, 25, 31, 34, 36 and 37 is/are rejected.
- 7) ☒ Claim(s) 6, 14-24, 26-30, 32, 33, 35 and 38-41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Sirbu et al.(6,546,029).

Claim 1, figure 3 discloses a monolithic semiconductor laser cavity(100) having one segment and an output, an etched gap(16) extending through the segment, and a distributed Bragg reflector(12a).

Claim 2, the laser cavity disclosed in figure 3 has a total length of between 10 and 10,000 micrometers.

Claim 3, the disclosed etched gap has a length of between 0.001 and 10 micrometers(col. 4, line 56).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-5, 7-12, 25, 31, 34 and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sirbu in view of Spitzer(5,241,555).

Sirbu does not disclose a photonic device connected to an output of the laser cavity, the laser in the shape of a ring, or a facet at the Brewster angle.

Claims 4 and 34, figure 9 of Spitzer discloses a photonic device(78) connected to an output of the laser cavity as recited.

Claim 5, Spitzer discloses a ring laser(abstract) for use in a gyroscope(col. 1, lines 14-16).

Claims 7 and 10, Spitzer discloses a semiconductor laser cavity having an etched facet(col. 6, line 11) at the Brewster angle to eliminate reflections(col. 3, lines 13-16) at one end of a photonic device(78).

Claim 8, see claim 2 above.

Claim 9, see claim 3 above.

Claim 11, figure 9 of Spitzer discloses a cavity(26) that includes an entrance facet(exit end of laser no. 24) and an exit facet(entrance end of laser no. 24).

Claim 12, figure 9 of Spitzer discloses an entrance facet that is directly coupled to another photonic device(24).

Claim 25, figure 3 of Sirbu discloses a solid state waveguide cavity having an etched entrance facet and an etched exit facet(col. 3, lines 40-51; and col. 3, lines 20-23), and an etched gap(16) extending through the solid state waveguide cavity between

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the entrance and exit facets having a pair of parallel etched facets spaced apart by a length of between about 0.001 micro-meters and 10 micro-meters(col. 4, line 56).

Claim 31, figure 9 of Spitzer discloses a laser cavity that multiple segments joined end-to-end to form a ring cavity, at least two of the segments being joined at an etched facet(16) to provide the output, where the at least one etched gap disclosed in Sirbu would extend through one of the segments if the laser disclosed in Sirbu would be used as the laser disclosed in Spitzer(24).

Claim 36, figure 3 of Sirbu discloses laser light propagating along an optical axis of a ring cavity(Spitzer) where an etched gap(16) includes etched facets spaced apart along the optical axis.

Claim 37, the etched facets disclosed in figure 3 of Sirbu are perpendicular to the optical axis.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the ring shape and Brewster's angle orientation disclosed in Spitzer with the laser disclosed in Sirbu for improved performance and application of the device as disclosed in Spitzer.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sirbu in view of Spitzer as applied above, and further in view of Zoll.

Sirbu and Spitzer do not disclose a V-shaped laser.

Claim 13, figure 2 of Zoll discloses a V-shaped laser(10) to produce a nonlinear light path(col. 2, lines 3-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the laser disclosed in Sirbu and Spitzer with a V shaped device as disclosed in Zoll to improve device stability and reliability as disclosed in Zoll.

Allowable Subject Matter

6. Claims 6, 14-24, 26-30, 32-33, 35 and 38-41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter. The following limitations are primarily responsible for distinguishing these claims over the prior art.

Regarding claim 6, the limitations concerning the laser cavity including two segments joined at an etched output facet to form a V-shaped laser, the at least one etched gap in at least one segment providing improved unidirectionality; regarding Claim 14, the limitations concerning the etched facet at or near the Brewster angle being at an end of the first leg of the V-shaped structure; regarding claim 15, the limitations concerning the first and second legs being joined at corresponding ends to form a V-shaped structure where an exit facet is positioned at the joint of the first and second legs; regarding claim 16, the limitation concerning an entrance facet at a free end of the second leg of the V-shaped structure; regarding claims 17-24 and 26-30, the limitations concerning the segment incorporating multiple etched gaps extending through the segment; regarding claim 32, the limitations concerning the DBR being

located externally of the ring laser cavity and adjacent the output etched facet; regarding claim 33, the limitations concerning the laser cavity including three segments joined end-to-end to form a triangular ring laser including at least one etched gap in at least one of the segments to enhance unidirectionality in the laser; regarding claim 35, the limitations concerning at least one etched gap extending through each of at least two of the segments; regarding claim 38, the limitations concerning the etched facets being parallel to each other and angled with respect to the optical axis; and regarding claims 39-41, the limitations concerning including at least first and second etched gaps spaced apart along the optical axis to define an intermediate segment between the gaps where each of the gaps including a pair of spaced, parallel facets.

Proper motivation could not be found in the prior art to combine references that disclose these limitations with the references that disclose the other limitations recited in the claims of this application.

Response to Arguments

8. Applicant's arguments with respect to the above rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Based upon applicant's arguments, the finality of the previous Office Action is withdrawn.

Correspondence

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Jim Vannucci whose phone number is (571) 272-1820.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center whose telephone number is (703) 308-0956.

Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (571) 273-8300.

A handwritten signature in black ink that reads "James Vannucci". The signature is written in a cursive style with a large, stylized "J" and "V".

James Vannucci